

ART. VIII.—*Notes on some Spiders from the Upper Endeavour River, Queensland, with Description of two New Species.*

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(With Plate XIII.).

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Professor Baldwin Spencer kindly handed me a small collection of spiders recently received by himself and Mr. C. French from the Upper Endeavour River, Queensland, which on examination I find to contain some features of considerable interest.

I append the list of species as follows:—

Gasteracantha vittata, Thorell	-	3	females
Gasteracantha suminata, L. Koch	-	1	„
Nephila fuscipes, C. Koch	-	3	„
Nephila (? sulphurosa, L. Koch)	-	1	male
Nephilengys (Nephila, E. Simon)			
rainbowi, nov. sp.	-	2	females
Argiope principalis, L. Koch	-	1	„
Epeira (Araneus, E. Simon) capitalis,			
L. Koch	-	1	„
„ „ producta, L. Koch	{	1	„ full-grown
		3	„ immature
„ „ nephilina, L. Koch		1	„
Cyrtophora parnasia, L. Koch	-	1	„
Poltya frenchi, nov. sp.	-	1	„
Aname pallida, L. Koch	-	1	„ young, half-grown
Phlogius crassipes, L. Koch	-	1	female
Heteropoda pallida, L. Koch	-	1	? young
Heteropoda salacia, L. Koch	-	3	males
Cymbacha saucia, L. Koch	-	1	female
Hasarius albocinctus, v. Keyserling		1	male

The 27 specimens are representative of at least 16 species and of 12 genera. They come from a district well worked by L. Koch's friends and collectors but include two certainly new species.

Writing in 1872 L. Koch described two species of spiders from the Philippine Islands and Borneo, for which he created the genus *Nephilengys* at the same time upbraiding his friend the celebrated arachnologist the Rev. O. P. Cambridge, for having included in the genus *Nephila*, Leach, a spider from the island of "Taprobane," named by him *N. rivulata* but which, as L. Koch felt, differed too markedly from the type of this genus to be possibly included and which belonged to the type of his *Nephilengys*. A fourth species from the Malabar Coast placed by Walckenaer in his genus *Epeira* completed the list of those known to L. Koch.

In publishing the "Australian Spiders" he utilised the opportunity to describe the two above-noted species, and to bring forward his new genus, in the anticipation that through its connection, by chains of islands, to the Philippine group, some species might be found on the Australian continent.

In looking over Professor Spencer's specimens I find two females, superficially somewhat like *Argiope*, which prove, on examination, to have marked characteristics of each of the genera *Nephila*, *Herennia*, *Argiope*, and *Gea* (*Ebœa*, L. Koch), genera which, all allied, form successive groups of M. Eugene Simon's adjacent sub-families *Nephilinae* and *Argiopinae*.

They seem to me, however clearly, not confined within the bounds of any one of these groups, and I had decided on a new genus for them, when I was struck with their conformity with L. Koch's above-mentioned genus, combined with his anticipation that it would possibly be found in Australia.

The genus was clearly made for them, and they might be its type form.

They now turn up, twenty-five years afterwards, in one of his best searched hunting grounds.

M. Simon, in his splendid work "*Histoire Naturelle des Araignées*" now being published, puts the genus back into *Nephila*. His argument that it runs into *Nephila* would equally serve for connecting through this species all the genera from *Nephila* to certainly *Gea*, and perhaps *Epeira* (*Araneus*, E. Simon).

The side eyes, besides being nearly as wide apart ($2\frac{1}{2}$ diams.) as the front and rear median, approach the latter almost as closely as the median themselves lie from one another.

The epigyne is a distinctly advanced development on the *Nephila* type, and the metatarsal joint of all legs just equals in length the patella cum tibia.

The cephalothorax has also progressed (or retrograded), from *Nephila* towards *Argiope* and *Gea*.

The genus seems to lie between *Herennia* and *Gea* in much the same manner as M. Simon points out that *Herennia* does between *Nephila* and *Argiope*.

We have some nice specimens of L. Koch's *Epeira producta* and *Epeira capitalis*, showing not only the variations described by him in the former, one of which brings it close up to *E. capitalis*, but that the latter which really only differs in the pattern of the back of the abdomen, is no more than a variety, at most, of the former species. Koch makes the front middle and rear middle eyes of *E. producta* almost equal in size, while in *E. capitalis* the front middle are larger than the rear middle eyes.

It was this peculiarity that induced me (in spiders of the Horn Expedition) to make a new species of *Epeira frostii*, which is very close to *E. producta*, but has the front middle eyes largest. Including these specimens of Professor Spencer's, which in other respects all agree exactly with *E. producta*, I have never seen one which has not had the front middle eyes larger than the rear, and I am inclined to think that Koch may have accidentally exaggerated this point, and that the whole three species are, at most, local varieties of the same.

The only other difference noted by Koch is that in *E. producta*, the stylus of the epigyne is dilated in the middle, whereas, in *E. capitalis* it is not. I do not find this difference to hold good as, although more often dilated than not, it is indifferently the same in both species; both in length, when full-grown, and in the remainder of the chitinous placque there is absolutely no difference whatever. The pectinations, falx teeth, and other small points are the same in both species.

One peculiar feature I notice in the largest of these *Epeira capitalis* is a development of one of the bristles which meet the claws from the inner side, at the end of the tarsal joint of the first and second pairs of legs.

The corresponding bristle on the outer side is very stout and horny at the base, from which it tapers sinuously to the point,

with six pectinations along the middle, but the inner side one is flattened and dilated in the middle almost into the shape of a leaf with numerous small scollop like pectinations all along the outer edge, and a curved claw at the end.

The second new species belongs to the curious genus *Poltys*, C. Koch, in M. Simon's group *Poltyæ*, one of his many divisions of his sub-family *Argiopinæ*—one of the peculiarities of these spiders is that six of the eyes stand on a little head of its own joined by a neck to the rest of the cephalothorax while two other eyes are set a long way off on the main cephalic part.

Their most striking feature, however, is the development of warty prominences on the abdomen which has the appearance of just growing by chance in every direction and the more species you examine the less do they seem to be guided by any regular law in their remarkable growth.

I have not seen sufficient material to know how far the projections are persistent in the same species, but they are not quite regular even in the same individual. Among the *Cyrtarachne* I have noticed specimens where, though identical in every other respect, normal abdominal prominences of a very decided type were entirely absent, and it would seem as if these wart-like projections were among the latest developments of the species.

A male *Nephila* has unfortunately lost both palpi and legs except No. III. on one side—it is most like *N. sulphurosa*, L. Koch.

We experience great difficulty in obtaining evidence connecting the males and females in this genus, in which the size and appearance of the sexes differs so materially, and much more field work is required in the generally sparsely inhabited districts in which they are most abundant before they can be allotted with certainty.

I trust that as time goes on we may be favoured with many more specimens from this apparently rich district.

I append detailed descriptions of the two new species which I have ventured to name *Nephilengys rainbowi* and *Poltys frenchi*, after my friends and fellow-workers Mr. W. J. Rainbow of the Australian Museum, Sydney, and Mr. C. French, Government Entomologist of Victoria.

Nephilengys rainbowi, nov. sp.

Colour.

Cephalothorax.—Bright chestnut on cephalic part. Eye space black brown. A longitudinal yellow streak from front to rear of thoracic part, remainder dark red-brown with grey hairs.

Mandibles and Maxilla.—Black-brown, fangs of former and edge of latter red-brown. *Lip*, paler brown. All with upstanding dark brown hairs.

Sternum.—At sides and transversely across the middle black-brown, and upper and lower portions yellowish-grey.

Coxæ.—Yellow transverse stripe between two black ends.

Abdomen.—Above mottled with dark and light brown patches, fine pale recumbent pale greyish-brown hairs; below greyish-brown mottled with dark brown. A larger dark brown patch in front of spinnerets, which with epigyne are black-brown. Sides dark brown, with three backward curving paler stripes reaching from back to underneath. Very fine recumbent pale brown hair.

Palpi.—Yellow on femoral joint changing to dark red-brown in tibial and tarsal with upstanding black-brown hairs bristles and spines.

Legs.—Yellow to red-brown, darker on tarsus and metatarsus and on anterior end of the other joints forming on underside nearly black patches.

Shape.

Cephalothorax.—Low on thoracic, raised and convex on cephalic part, a deep transverse fovea separating the two. In middle of former a deep transverse oval dimple. The cephalic part set with short thick spines.

The clypeus recedent, in the centre as wide as front middle eyes. The four middle eyes form a rectangle slightly longer than broad. Front eyes largest, their diameter apart, and $1\frac{1}{2}$ diameters from front side eyes. The rear middle eyes are smaller two of their diameters apart, and same distance from front pair, three diameters from rear side eyes. The side eyes are smaller than the rear middle, set on an oblique tubercle, and are slightly nearer together than front and rear middle, being $2\frac{1}{2}$ of their own diameters apart. Both rows slightly recurved.

Mandibles.—Knee-formed at base. Longer than Patella I., and thicker than femur I. Smooth, with short black bristles on upper part. Three teeth on each edge of falx sheath, the middle one much the larger; fangs stout and well curved.

Maxilla.—As broad as long, truncate at top. *Lip* square from bottom edge to top of sides whence it goes into a point. This upper triangle being divided by a suture from the lower square.

Sternum.—Long shield shape, flat with low prominences pushing forward the two upper corners, and two more down each side. The posterior end slightly separates the fourth pair of coxæ, but does not pass more than half way between them.

The Abdomen is high, longer than broad, rounded in front and at the sides, running into a point at the rear. The Epigyne is transversely oval formed of two sinuous chitinous plates meeting in the middle. It is situated on a raised fold, and forward of it is a small oval bare depression.

The *Palpi* are as long as the Cephalothorax, the femoral joint curved inwards and thickened at the anterior extremity. Patellar and Tibial together shorter than tarsal joint.

Legs.—Long, rather fine, smooth on upper joints with regularly laid fine short hairs and short curved spines. The metatarsal joint equals in length the patella cum tibia on all legs. The lower tarsal claw bears two very short teeth near the base, the upper five fairly long teeth, of two specimens, both females, one is much lighter on the abdomen but darker on the cephalothorax and legs than the other.

MEASUREMENTS (IN MILLIMETRES).

	Length.		Breadth.									
Cephalothorax	-	7	-	$\left\{ \begin{array}{l} 3\frac{1}{2} \text{ in front.} \\ 4 \text{ in widest part.} \end{array} \right.$								
Abdomen	-	10	-	$6\frac{1}{2}$								
		Coxa	Tr. and femor.	Pab. and Tib.	Tars. and metab.	Total length.						
Legs	-	1	-	2	-	9	-	$8\frac{1}{2}$	-	$10\frac{1}{2}$	=	30
		2	-	2	-	8	-	7	-	9	=	26
		3	-	2	-	6	-	$4\frac{1}{2}$	-	6	=	$18\frac{1}{2}$
		4	-	2	-	7	-	7	-	9	=	25
Palpi	-	—	-	—	-	3	-	$1\frac{3}{4}$	-	$2\frac{1}{4}$	=	7

Relative length of legs, 1, 2, 4, 3.

This species is much smaller than *H. schmeltzii*, L.K., from the Philippine Islands, its legs not so continuously ringed. The underside of abdomen less distinctly marked and the epigyne more complex. The maxillæ do not reach so far down the lip posteriorly, otherwise the two seem very similar.

Though nearer in size to *N. hofmanni*, L.K., from Borneo, it differs from it in much the same points as the above. In *hofmanni* also the epigyne is less differentiated and the meta-tarsal joints seem longer in proportion than in these species.

***Poltys frenchi*, nov. sp.**

Colour.

Cephalothorax.—Pale to darker orange-yellow, being lightest on the thoracic part just behind the cephalic and deepening into red-brown on the eye prominence, a pale narrow band borders the edge of the pass thoracic. The scanty hairing is quite pale yellow.

The *Mandibles* are a dark orange on the upper half, shaded into red-brown on the lower, the former part having long stiff pale yellow-grey hairs, the latter thin brown, the fangs black-brown at base, lighter into red towards the points.

The *Maxillæ* and *Lip* are a dirty yellow-grey with grey edgings and a silver-grey fringe.

Sternum.—Black-brown, with black hairs.

Palpi.—Yellow-brown, darker brown on tibial joint. Tarsal joint thickly covered with long pale yellow hair.

Legs.—Red-brown from coxa to metatarsus, tarsus golden-brown, with pale drab hair and bristles, and reddish-orange spines. The end of the femoral and the patellar joint are dark brown.

The *Abdomen* is of a dirty darker and lighter brownish-grey covered with silvery-grey hairs. In front a dark transverse curved stripe above the juncture with the cephalothorax and an oblong black and white spot in the centre beyond same. Behind, a darker stripe stretches down the middle hollow of the back and in the hollow between the warty prominences. The underside of the abdomen below the juncture with the cephalothorax is darkest at the sides with a paler central longitudinal streak. Epigyne and spinnerets dark red-brown.

Shape.

The *Cephalothorax* is $\cdot 001$ longer than broad, a deep fovea curving forward separates the cephalic part from the thoracic, the latter being separately very convex steeply sloping to the edge all round, a dark coloured median stripe leads from its front edge to a deep circular depression at the top of the rear slope. The cephalic part is also strongly convex within its own borders and higher than the thoracic, rising from the dividing suture. Just above the base of the palpi it is constricted but slightly widens again with circular curves to the front centre from which a tubercle bearing six of the eyes stands out on a somewhat narrowed neck. The two rear side eyes when viewed from above stand far back on the main body of the pass cephalica, near the edge, in front of the constriction, and are about as far apart as their distance from the top front eyes on the tubercle. The rear eyes and the four on the top of the tubercle are equal in size, the lower pair in front of the tubercle being one and half times the diameter of the others. The top front eyes on the tubercle are two diameters apart and the same distance from the hinder pair also on top of tubercle. They are each of them one diameter from the lower larger eye on the same side of the tubercle as themselves.

The *Mandibles* are not so thick as the front femur and shorter than patella of same—they are conical, only slightly bowed, parallel on the outer side, and divergent in the lower half of the inner side. The fangs short and well curved, three teeth on outer falx edge, the lower quite small, two teeth on inner edge.

The *Maxillæ* are broad as long, truncate at top, inner edges parallel, the outer sides curving regularly to a small base level with bottom of *Lip*, which is broader than long, pointed at top, and less than half the length of the maxillæ.

The *Sternum* is flat, broadly cordate, sparsely covered with long thin upstanding hair.

The *Abdomen* looked at sideways stands upright at right angles with the cephalothorax with which it is joined at about one-third of its height. It is here at its greatest thickness and curves about equally at back and front down to the spinnerets, where it ends in a point. Upwards from point of juncture with

the cephalothorax it again curves inwards to a point, where a cubical shaped turret, divided into four at the top, stands pointing obliquely outwards.

The back view shows an inverted isosceles triangle, the turrets being at the base angles with an inverted saddle between them, and the spinnerets at the apex. On each side are placed two pairs of small conical prominences, one pair just below each turret and the other pair half way down on a level with the junction of the cephalothorax.

Viewed from front the turrets stand out obliquely with a conical prominence in the hollow between them flanked on each side by a smaller one. The upper pair of hinder prominences show out laterally.

The epigyne consists of a stout square transversely wrinkled plate lying on the body and supporting as a mid-rib a triangular broader follicle which stands out from the surface.

In the *Palpi* the femoral joint is curved to the head and thickened at the fore-end, the tarsal joint longer than tibial, and both are thickly covered with bristly hair and spines.

The *Legs* have the femoral joint stout, dilated in the middle and curved on the outer edge, the other joints tapering to a fine point on the tarsus. The femurs and patellæ are nearly bare, but the tibia tarsus and metatarsus are armed with long spines and thickly covered with stout upstanding bristly hair. On tibia and metatarsus I. and II. a closely lying double row of short curved spines on inner side gives the appearance of a magnified calamistrum.

MEASUREMENTS (IN MILLIMETRES).

		Long.	Broad.	High.		
Cephalathorax	-	5	-	4	-	—
Abdomen	-	5½	-	8½	-	10½
		Coxa.	Tr. and Femur.	Pal and Tib.	Metat. and Tars.	
Legs	-	1 - 1½	-	6 - 6	-	4½ = 18
	-	1½	-	5½	-	4 = 16½
	-	1½	-	3½	-	2½ = 11
	-	1½	-	5½	-	4 = 16½

Relative length of legs, 1, 2, 4, 3.

This species is a good deal larger than *P. lacinosus* to which it seems nearer than any other recorded. The prominences and colouring differ entirely both from that and its congener *P. mammeatus*.

Locality.—Upper Endeavour River, Queensland. One female only.

DESCRIPTION OF PLATE XIII.

Nephiliengys rainbowi.

- Fig. 1.—Dorsal view. Life size.
 Fig. 1*a*.—Eyes.
 Fig. 1*b*.—Lip and maxillæ.
 Fig. 1*c*.—Epigyne.
 Fig. 1*d*.—Tarsal claws.

Poltys frenchi.

- Fig. 2.—Dorsal view.
 Fig. 2*a*.—Side view.
 Fig. 2*b*.—Head, seen from in front.
 Fig. 2*c*.—Front view.
 Fig. 2*d*.—Head from above.
 Fig. 2*e*.—Lip and maxilla.
 Fig. 2*f*.—Rear view of abdomen.
 Fig. 2*g*.—Epigyne.

Epeira capitalis.

- Fig. 3.—Abdomen of *Epeira capitalis*.
 Fig. 3*a*.—Tarsal claws of the same.
 Fig. 3*b*.—Spine on the inner side of the foot of the same.
 Fig. 3*c*.—Spine on the outer side of the foot of the same.
 Fig. 3*d*.—Palp claw of the same.

Epeira producta.

- Fig. 4.—Abdomen and Cephalothorax of *Epeira producta*.
 Fig. 4*a*.—Side view of abdomen of the same.
 Fig. 4*b*.—Epigyne of *E. capitalis* and *E. producta*.

